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(54) **Odoriferous packaging material**

(57) Packaging material including plastics film sheet is applied with a medium containing microencapsulated material on its surface so that during use of the package the material contained in the micro capsules can be released. By this means a fragrance, odour inhibitor, animal repellent, etc. can be present as the package is used.

To ensure adequate release at the point of use surfaces of the sheet can be adhered together by adhesive containing micro capsules so that separation of the surfaces releases the contents of the micro capsules.

The overlying portions which are adhered together may be the gussets of a bag or the seal on a sealed container.

GB 2 198 062

PACKAGE

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This invention relates to packages and in particular to bags and other flexible containers made from plastics or like materials.

- Plastics bags are widely used for many packaging purposes such as for containing refuse, food, medical and other products and it may sometimes be desirable to incorporate into the bags a fragrance, odour inhibitor, disinfectant, disinfectant, insect repellant, flavour or other substance depending on the use to which the bag is to be put.
- 10 Hitherto no satisfactory means for achieving this has been commercially used and it is an object of the invention to overcome the problems previously encountered.

- It has been proposed to provide fragrances in packaging but this has usually involved incorporating the fragrance sprayed on the product and locating it within a sealed container. Once the container is opened the fragrance escapes and is no longer associated with the product within the container.

- According to one aspect the invention provides packaging material which includes plastics or like sheet material, in which microencapsulated material such as a fragrance, odour inhibitor, animal repellant or the like is applied as micro capsules to the surface of the sheet material in a medium which adheres the micro capsules to said surface in a manner such that the micro capsules can be broken during use of the material. According to another aspect the invention provides packaging material which includes plastics or like sheet material in which microencapsulated material such as fragrance, odour inhibitor, animal repellant or the like is applied to the surface of the

sheet material in an adhesive medium, and two portions of the sheet material overlay one another so that the adhesive medium causes the two portions to adhere together with a strength such that in use the portions
5 can be separated to thereby break at least some of the micro capsules and release the material within the micro capsules. Additional capsules may be broken during use of the package.

The strength of the adhesive will be selected according
10 to the nature of the package. Thus in the case where the adhesive is provided solely for release of the material in the micro capsules the adhesive will be weak whereas in the case where the adhesive functions to secure the package the adhesive will be relatively
15 stronger. However in each case the adhesive will be applied between overlying surfaces which are in use intended to be pulled apart, and/or as a surface coating where flexing and/or rubbing will cause the capsules to break.

20 Preferably the sheet material is plastics film and the packaging material is formed as a bag, portions of the surfaces of the bag carrying the micro capsules in said medium.

Conveniently the bag is formed with gussets which, prior
25 to use, have overlying portions, the overlying portions carrying adhesive and said micro capsules and the portions being adhered together so that upon separation of the portions the contents of micro capsules are released.

Thus in one application the package is in the form of a
30 plurality of plastics bags in a roll, the bags in the roll forming a continuous length from which each bag may be detached in turn during unwinding of the roll. In this case the bags are sometimes provided with side

gussets which define overlying surfaces of the bags and before use each bag is opened out to release the gussets. In the application of the present invention to such bags the adhesive with entrained micro capsules
5 is applied to the surfaces of the bags which are to be the overlying surfaces of the gussets before the bags are wound onto the roll. Upon drying of the adhesive the gusset surfaces are lightly adhered together. Thus when the individual bag is to be used a small resistance
10 to the opening up of the gussets is caused by the adhesive but on overcoming this resistance micro capsules in the adhesive are broken to release material in the micro capsules.

In the latter application the micro capsules may contain
15 a variety of materials. Thus in one arrangement when the bags are to be used for refuse containment and disposal and are prone to being broken open by cats, rats, foxes or the like the material may be a repellant to deter interference by such animals. Alternatively
20 the material may be a fragrance, bactericide or odour inhibitor to mask or inhibit unpleasant odours given off by refuse. Combinations of materials such as fragrance combined with animal repellant can also be used by blending various capsules.

25 The packaging material may be a sealed container for a product, the seal being formed at least in part by adhesive containing micro capsules applied to overlying surfaces of the container and access to the product being obtained by separating said overlying surfaces and thereby
30 releasing the contents of micro capsules.

Thus the package may be a sealed container for food or other products made from plastics in the form of a wrapping sheet.

After locating the product in the package the sheet is sealed by overlaying a portion of the sheet on itself and securing the surfaces by the application of adhesive in which is entrained micro capsules containing
5 a selected material. To gain entry to the product in the package the overlying surfaces must be separated and this action will release the material in the micro capsules as the package is opened. It will be appreciated that in this application the adhesive serves
10 a securing function for the package and can provide a relatively strong bond between the surfaces provided the bond is adequate to enable the surfaces to be pulled apart and the package to be opened.

In the latter application the micro capsules may contain
15 a fragrance appropriate to the product. Thus if the product is a baked product, such as biscuits, the fragrance may be the smell of baking.

According to a further aspect the invention provides a method of making a packaging material wherein a sheet of
20 plastics or like material is applied with a medium containing microencapsulated material such as a fragrance, odour inhibitor, animal repellent or the like so that the micro capsules in the medium are adhered to a surface of the sheet material in such a manner that in use of
25 the packaging material the micro capsules can be broken to release the microencapsulated material.

It will be appreciated that applications may be found for the invention in which two overlying surfaces are provided which have to be separated during use, whether
30 the surfaces are to be secured together due to the nature of the article or not, according to the application. In

each case an adhesive is used to carry the micro capsules of material so that the material is released during use of the article.

5 The micro capsules used are of known form and are made in known manner and are of the kind which can be suspended in a liquid medium without risk of the capsules breaking but when the capsules are dry they are easily broken to release their contents. Usually the capsules contain a liquid medium enclosed within a thin membrane of,
10 for example, gelatine.

In forming the package of the invention the micro capsules are mixed in the desired proportion with an adhesive and a liquid, usually water. The amount of liquid in the mixture, the nature of the adhesive used
15 and quantity applied determines the strength of the resulting adhesive bond. Generally the lower the proportion of adhesive in the mixture the weaker the bond which will be created by the adhesive. The adhesive, micro capsules and liquid mixture may be applied
20 in any suitable manner, such as by spraying, onto the surfaces of the package. After application the mixture dries out to form a bond and the breaking of the bond breaks and releases the material from at least some of the capsules in the adhesive. Further release of
25 material from unbroken capsules may take place during subsequent handling or use of the package which causes such capsules to break.

Examples of adhesives which have been found to be suitable are as follows:-

30 Heat sealable adhesives may be used selected from P.V.D.C. emulsions, acrylic co-polymer emulsions, E.V.A. co-polymer compounds.

A suitable surface bonded adhesive which may be used is an acrylic emulsion.

Alternatively the adhesive may be a pressure-sensitive adhesive selected from P.V.D.C. emulsion, acrylic
5 emulsion and synthetic rubber emulsion.

The invention will find wide usage with packages made of plastics film but other materials may also be used. The addition of fragrances, repellants and other materials enhances the value of the package at moderate
10 cost and can usually be achieved without otherwise changing significantly the manner in which the package would normally be produced and used in the end product.

It will be appreciated that, as well as locating the micro capsules between two surfaces by adhesive so that
15 separation of the two surfaces releases the contents of the micro capsules, the surface of a sheet of packing material can be applied with medium containing the micro capsules, the medium adhering to the sheet and causing the micro capsules to be located on said surface. After
20 the medium has dried or cured subsequent rubbing, abrasion or other action on the surface will break the micro capsules and release their contents. In this case the medium may be a lacquer or other material which will adhere to the surface.

Claims

1. Packaging material which includes plastics or like sheet material, in which microencapsulated material such as a fragrance, odour inhibitor, animal repellent or the like is applied as micro capsules to the surface of the sheet material in a medium which adheres the micro capsules to said surface in a manner such that the micro capsules can be broken during use of the material.
2. Packaging material which includes plastics or like sheet material in which microencapsulated material such as fragrance, odour inhibitor, animal repellent or the like is applied to the surface of the sheet material in an adhesive medium, and two portions of the sheet material overlay one another so that the adhesive medium causes the two portions to adhere together with a strength such that in use the portions can be separated to thereby break at least some of the micro capsules and release the material within the micro capsules.
3. Packaging material according to claim 1 or 2 wherein the sheet material is plastics film and the packaging material is formed as a bag, portions of the surfaces of the bag carrying the micro capsules in said medium.
4. Packaging material according to claim 3 wherein the bag is formed with gussets which, prior to use, have overlying portions, the overlying portions carrying adhesive and said micro capsules and the portions being adhered together so that upon separation of the portions the contents of micro capsules are released.

5. Packaging material according to claim 3 wherein the packaging material is a sealed container for a product, the seal being formed at least in part by adhesive containing micro capsules applied to
5 overlying surfaces of the container and access to the product being obtained by separating said overlying surfaces and thereby releasing the contents of micro capsules.
6. Packaging material according to any one of the
10 preceding claims wherein the micro capsules are small capsules of liquid medium enclosed in a thin membrane.
7. Packaging material according to any one of the
15 preceding claims wherein the adhesive is selected from heat sealable adhesive, surface bonded adhesive and pressure sensitive adhesive.
8. Packaging material according to claim 7 wherein the adhesive is selected from P.V.D.C. emulsions, acrylic co-polymer emulsions, E.V.A. co-polymer
20 compounds, acrylic emulsions, and synthetic rubber emulsions.
9. A method of making a packaging material wherein a sheet of plastics or like material is applied with a
25 medium containing microencapsulated material such as a fragrance, odour inhibitor, animal repellent or the like so that the micro capsules in the medium are adhered to a surface of the sheet material in such a manner that in use of the packaging material the micro capsules can be broken to release the
30 microencapsulated material.

10. A method according to claim 9 wherein the medium
containing the microencapsulated material is
applied between portions of the sheet material
which subsequently overlie one another to adhere
said portions together, the portions being
separable so that during separation micro capsules
are broken to release their contents.